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W. E. RICKER Shrimp Biomass Survey 90-S-1 West Coast of Vancouver Island April 24-May 2, 1990

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1991

Canadian Data Report of Fisheries and Aquatic Sciences 820

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91-04119/

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Cat. No. Fs 97-13/820E ISSN 0706-6465

Correct citation for this publication:

Harling, W. R. and J. A. Boutillier. 1991. W. E. RICKER shrimp biomass survey 90-S-1, West Coast of Vancouver Island, April 24-May 2, 1990. Can. Data Rep. Fish. Aquat. Sci. 820: 43 p.

ABSTRACT

Harling, W. R. and J. A. Boutillier. 1991. W. E. RICKER shrimp biomass survey 90-S-1, West Coast of Vancouver Island, April 24-May 2, 1990. Can. Data Rep. Fish. Aquat. Sci. 820: 43 p.

This report summarizes trawl catch data collected off the west coast of Vancouver Island during a shrimp biomass survey in the spring of 1990. This survey is one in a continuing series conducted during the same time period each year to assess abundance and distribution of the pink shrimp, *Pandalus jordani*. Detailed catch records and resulting evaluations of biomass and year-class strength are presented. A comparison with previous surveys to the same area is shown. Biomass estimate was ≈2947 metric tonnes, about 78% of the 1989 abundance.

RÉSUMÉ

Harling, W. R. and J. A. Boutillier. 1991. W. E. RICKER shrimp biomass survey 90-S-1, West Coast of Vancouver Island, April 24-May 2, 1990. Can. Data Rep. Fish. Aquat. Sci. 820: 43 p.

Ce rapport présente des données sur les prises effectuées au chalut au large de la côte ouèst de l'île Vancouver lors d'une étude de la biomasse de crevette menée au printemps 1990. Ces campagnes d'échantillonnage ont lieu chaque année à la même époque et visent à évaluer l'abondance et la distribution de la crevette *Pandalus jordani*. Des données quantitatives détaillées sur les prises et les évaluations de la biomasse et des effectifs par classe d'âge effectuées à partir de ces données sont présentées. Ces résultats sont comparés à ceux obtenus pour la même région les années précédentes. La biomasse a été estimée à environ 2 947 tonnes métriques, valeur correspondant approximativement à 78% de la biomasse de 1989.

INTRODUCTION

A shrimp biomass survey of Tofino ground, [fisheries statistical area (FSA) 124] and to a lesser extent, Nootka ground (FSA 125) was conducted April 24-May 2, 1990 using the research vessel W. E. RICKER. The Tofino shrimp ground lies offshore from the west coast of Vancouver Island between 48°40' and 49°15' north latitude and Nootka ground lies between 49°15' and 49°35' N latitude (Fig. 1). Since 1973, this type of survey has been conducted on these grounds 14 times in spring (April-May) and 3 times in late summer (August-September). The purpose of these cruises is to provide relative estimates of total biomass, year-class abundance, and distribution of the smooth pink shrimp, *Pandalus jordani*.

SURVEY DESIGN AND FISHING GEAR

The biomass trawl survey was carried out using a standard 18.6 m, National Marine Fisheries Service (NMFS) high-rising, shrimp-sampling trawl (Boutillier et al. 1977). Trawl locations for the biomass survey were established using a systematic grid pattern based on Loran C blocks. Tows were made diagonally through adjacent 5900-Z 10 microsecond blocks along successive 5900-Y lines, 20 microseconds apart. Tow duration, except when tows were fouled, was 30 minutes and the distance covered, depending on tide and wind, ranged from 1.2 to 1.7 nautical miles (M) with an average distance of 1.44 M. From each trawl catch dumped on deck, large species were sorted, weighed and discarded. A small, random, bucket sample of shrimp was collected and processed to determine the number of shrimp per kilogram (No./kg). This 1 kg sample was then sorted by sex, and the carapace length measured (orbit of the eye to mid-dorsal, posterior margin of the carapace). The balance of each catch, consisting of shrimp, small fish, and invertebrates, was shovelled into baskets and weighed. One or two tubs of this mixed catch were then sorted by species and each species weighed to determine the proportional catch composition. The calculated percentage of species by weight was then used to extrapolate the total weights of shrimp and other species in the catch.

Biomass and year-class abundance indices were calculated using a bicubic spline. For this analysis the Tofino ground is defined as a rectangular area that starts at 126°05' longitude and 48°35' N latitude and extends 50 M at 322° True (T) and 15 M at 52°T. This area is divided into 2 sq M cells which are 1 M wide and 2 M long. The towable area within this large area is identified by a set of untowable boundary points which were determined from problem areas found in all previous surveys. The calculation of biomass assumes that all the towable area inside the boundary is potential shrimp grounds. This analysis sets the density [(kg or #)/0.2 sq. M towed] obtained in the tow or, in the case of repeated tows, the mean of the two tows, equivalent to the density at the grid point which corresponds to the centre point of the tow. The 2 sq. M matrix is divided into smaller 0.2 sq. M area and a bicubic spline is used to fill blank grid cells with interpolated

values. The biomass and areas of concentration are then calculated by adding the values greater than some minimal density to determine biomass and by counting the grid cells and multiplying by 0.2 to determine the areas.

RESULTS

A total of 82 tows were completed; 61 during the first phase on Tofino ground, 10 on Nootka ground, and 11 during the second phase on Tofino ground. Total catch by important species is summarized in Table 1. Detailed fishing logs and catch records for Tofino and Nootka grounds are presented in Appendix Table 1.

TOFINO GROUND PHASE 1 AND PHASE 2

Tow locations for Tofino ground are shown in Figure 2. This area-swept biomass survey found that shrimp were in concentrations >1 tonne/sq. M in a 190 sq. M area. All Tofino ground tows were usable. Of the 72 tows, 60 contained shrimp varying in amounts from a trace to 258 kg per nautical mile towed (kg/M), with a mean catch rate of 58 kg/M (Table 2). An unweighted estimate of the age-class structure of the shrimp determined that the samples were composed of <1% 1-year-old, 37% 2-year-old, and 62% 3-year-old animals. Mean carapace size for these three age groups were 12.3, 16.8, and 20.4 mm, respectively. The number of shrimp per kilogram ranged from 162 to 308 while the size and density of shrimp for each tow combined to give an overall weighted mean of 240 shrimp/kg.

NOOTKA GROUND

During this survey, insufficient time precluded a thorough assessment of this area. As a result, only 10 tows were completed (Fig. 2 insert). All 10 tows contained shrimp in concentrations which ranged from trace to 116 kg/M (Table 2). An unweighted estimate of the age-class structure of the shrimp determined that the samples were composed of <1% 1-year-old, 37% 2-year-old, and 62% 3-year-old animals. Mean carapace size of these three age groups were 12.2, 16.8, and 20.4 mm, respectively. The number of shrimp for each tow combined to give an overall weighted mean of 286 shrimp/kg.

DISCUSSION

Total biomass of pink shrimp on the Tofino ground continues to decline (Fig. 3). The 1990 biomass estimate is about 78% of the 1989 assessment. The proportion of age classes contributing to the total biomass has again shifted. The number of 3+ animals has increased from 1989 to 1990 by 15% (3.2×10^8 to 3.7×10^8) but the number of 2+ animals has declined by 39% (5.4×10^8 to 3.3×10^8). Moreover, the number of 1+ animals has declined by 82% (Fig. 4). The biomass prediction for 1991 is for a further decline in overall abundance and if the estimate of 1+ animals is accurate (the 1989 survey was conducted ≈2 weeks later than this survey) future prospects for this fishery appear bleak.

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Table 1. Total catch, by species, from W. E. RICKER shrimp biomass survey 90-S-1, April 24-May 2, 1990.

Species		Weight (kg)	% of catch
Pink shrimp	*Pandalus jordani*	6491	38
Dogfish	*Squalus acanthias*	3683	22
Eulachon	*Thaleichthys pacificus*	2544	15
Yellowtail rockfish	*Sebastes flavidus*	692	4
Dab	*Citharichthys* spp.	580	3
Turbot	*Atheresthes stomias*	470	3
Pacific cod	*Gadus macrochepalus*	405	2
Lingcod	*Ophiodon elongatus*	351	2
Skate	*Rajidae*	268	2
Herring	*Clupea harengus pallasi*	205	1
Canary rockfish	*S. pinniger*	199	1
Slender sole	*Lyopsetta exilis*	187	1
Others[a]		1,045	6
Totals		17,120	100

[a]Species amounting to <1% each of the total catch. (See footnotes to Appendix Table 1 for list.)

Table 2. *P. jordani* catch (kg) per nautical mile (M) for Tofino and Nootka grounds, W.E. Ricker shrimp biomass survey 90-S-1, April 24-May 2, 1990.

Tow No.	Depth (metres)	Duration (min)	M	Weight (kg)	Kg./M	No./kg
		a) Tofino Ground				
1	133-137	30	1.4	4	3	249
2	115-116	30	1.3	0	-	-
3	100-101	30	1.5	0	-	-
4	102-104	30	1.5	0	-	-
5	121-122	30	1.4	4	3	208
6	139-144	30	1.4	28	20	215
7	150-153	30	1.4	29	21	234
8	158-161	30	1.5	17	11	214
9	144-146	30	1.6	27	17	160
10	128-129	31	1.6	72	51	221
11	108-109	30	1.4	0	-	-
12	110-110	30	1.5	0	-	-
13	129-130	30	1.4	42	30	198
14	1420148	30	1.2	45	38	178
15	152-154	31	1.5	102	68	218
16	158-162	30	1.6	2.5	16	233
17	174-175	29	1.3	0	-	-
18	125-127	30	1.4	73	52	200
19	115-116	30	1.2	9	8	206
20	137-138	30	1.3	107	82	219
21	146-147	30	1.3	145	112	228
22	158-161	30	1.5	220	147	265
23	148-150	30	1.4	161	115	242
24	137-137	30	1.3	58	45	211
25	122-125	30	1.5	220	147	220
26	123-124	29	1.5	93	62	203
27	109-115	30	1.6	47	29	192
28	111-115	30	1.3	192	148	195
29	94-100	30	1.4	0	-	-
30	135-139	30	1.4	91	65	218
31	143-146	30	1.4	169	121	308
32	140-143	33	1.5	213	142	290
33	130-135	30	1.5	199	133	247
34	119-124	30	1.5	173	115	229
35	107-111	30	1.5	0	-	-
36	103-107	30	1.4	0	-	-
37	119-122	30	1.7	167	98	197
38	129-129	30	1.5	205	137	192
39	134-137	30	1.5	166	111	270
40	150-152	32	1.7	Tr	-	-
41	142-144	31	1.5	34	23	288
42	131-134	29	1.6	74	46	267
43	124-128	30	1.5	55	37	231
44	122-122	30	1.5	84	56	162
45	108-111	30	1.4	10	7	185

Table 2 (cont'd)

Tow No.	Depth (metres)	Duration (min)	M	Weight (kg)	Kg./M	No./kg
46	94-98	30	1.5	0	-	-
47	102-104	30	1.3	74	57	207
48	114-115	30	1.3	119	92	192
49	123-124	30	1.6	280	175	220
50	125-126	30	1.2	25	21	240
51	91-92	30	1.5	Tr	-	-
52	94-97	31	1.5	58	39	195
53	104-106	30	1.6	55	34	204
54	113-113	30	1.6	102	64	225
55	120-120	30	1.4	6	4	230
56	115-115	30	1.4	93	66	240
57	108-109	30	1.4	62	44	207
58	100-101	30	1.5	Tr	-	-
59	92-94	30	1.5	0	-	-
60	104-105	30	1.4	0	-	-
61	111-112	30	1.6	22	14	214
72	116-116	30	1.5	19	13	234
73	121-122	30	1.5	268	179	235
74	127-127	30	1.4	125	89	257
75	129-129	30	1.5	387	258	312
76	124-129	30	1.4	214	153	276
77	138-141	30	1.4	240	171	267
78	127-130	30	1.4	116	83	216
79	125-131	30	1.2	148	135	258
80	137-143	30	1.4	82	59	239
81	142-145	30	1.6	56	35	185
82	127-132	30	1.4	86	61	206
		(b) Nootka Ground				
62	139-140	27	1.4	6	4	352
63	127-130	30	1.4	162	116	328
64	117-118	30	1.5	19	13	238
65	118-119	30	1.5	41	27	204
66	129-131	30	1.3	140	108	265
67	136-137	30	1.5	34	23	358
68	141-141	30	1.5	45	30	280
69	128-131	30	1.4	7	5	188
70	143-149	30	1.5	12	8	206
71	147-147	25	1.2	34	28	273

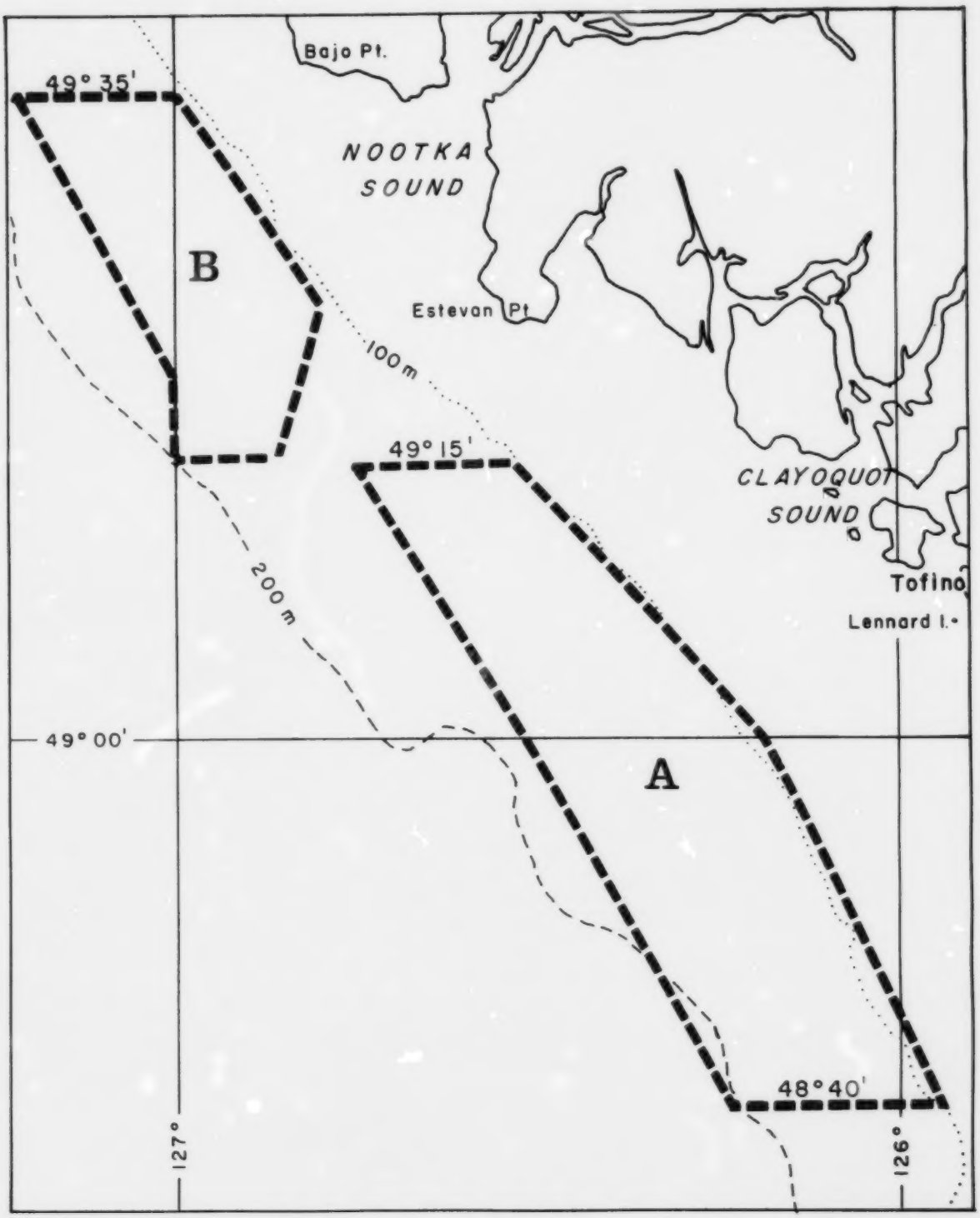

Fig. 1. General location of the Tofino (A) and Nootka (B) smooth pink shrimp (*P. jordani*) fishing grounds off west coast Vancouver Island.

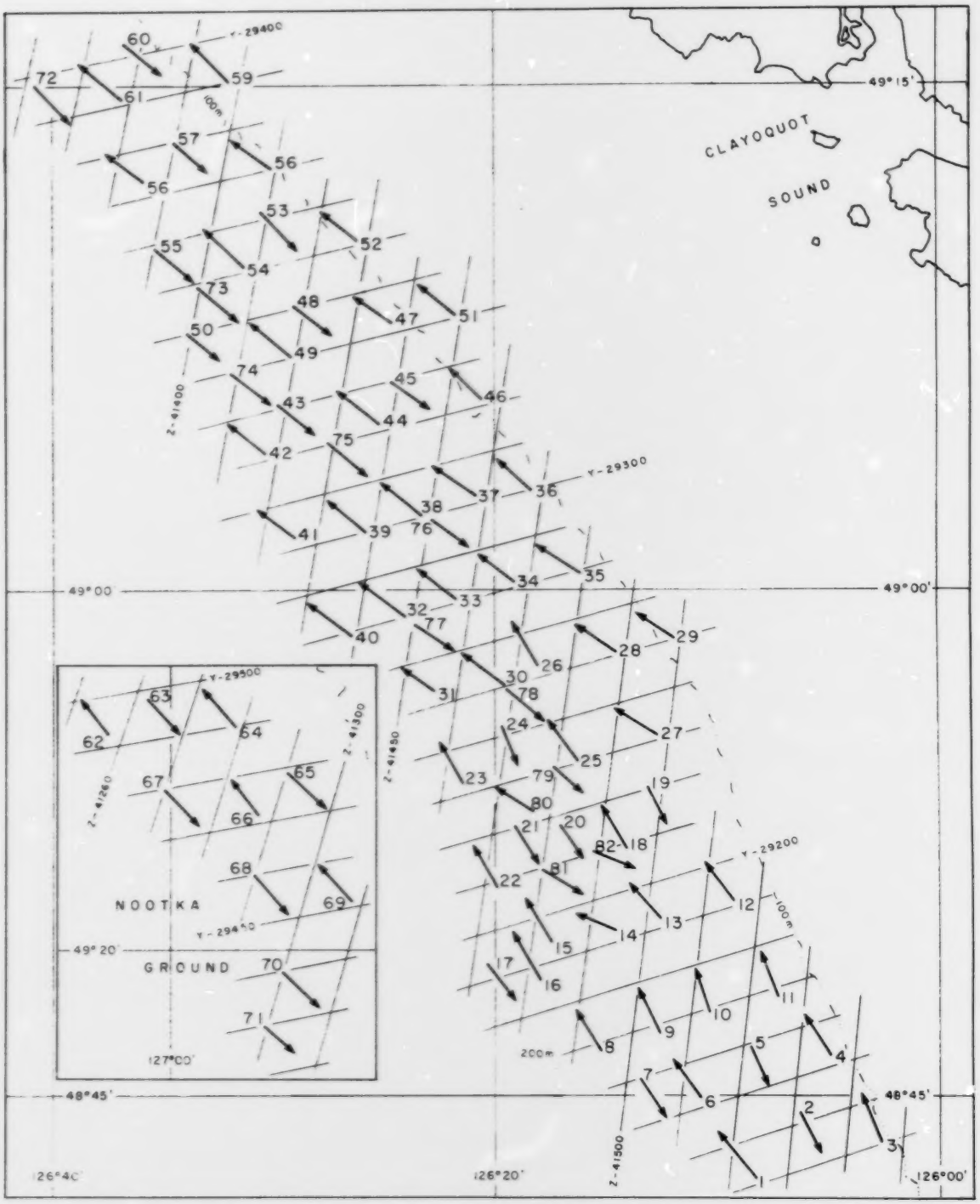

Fig. 2. Location of tows completed by F.R.V. W.E. RICKER during shrimp biomass survey 90-S-1 off west coast Vancouver Island, April 24-May 2, 1990.

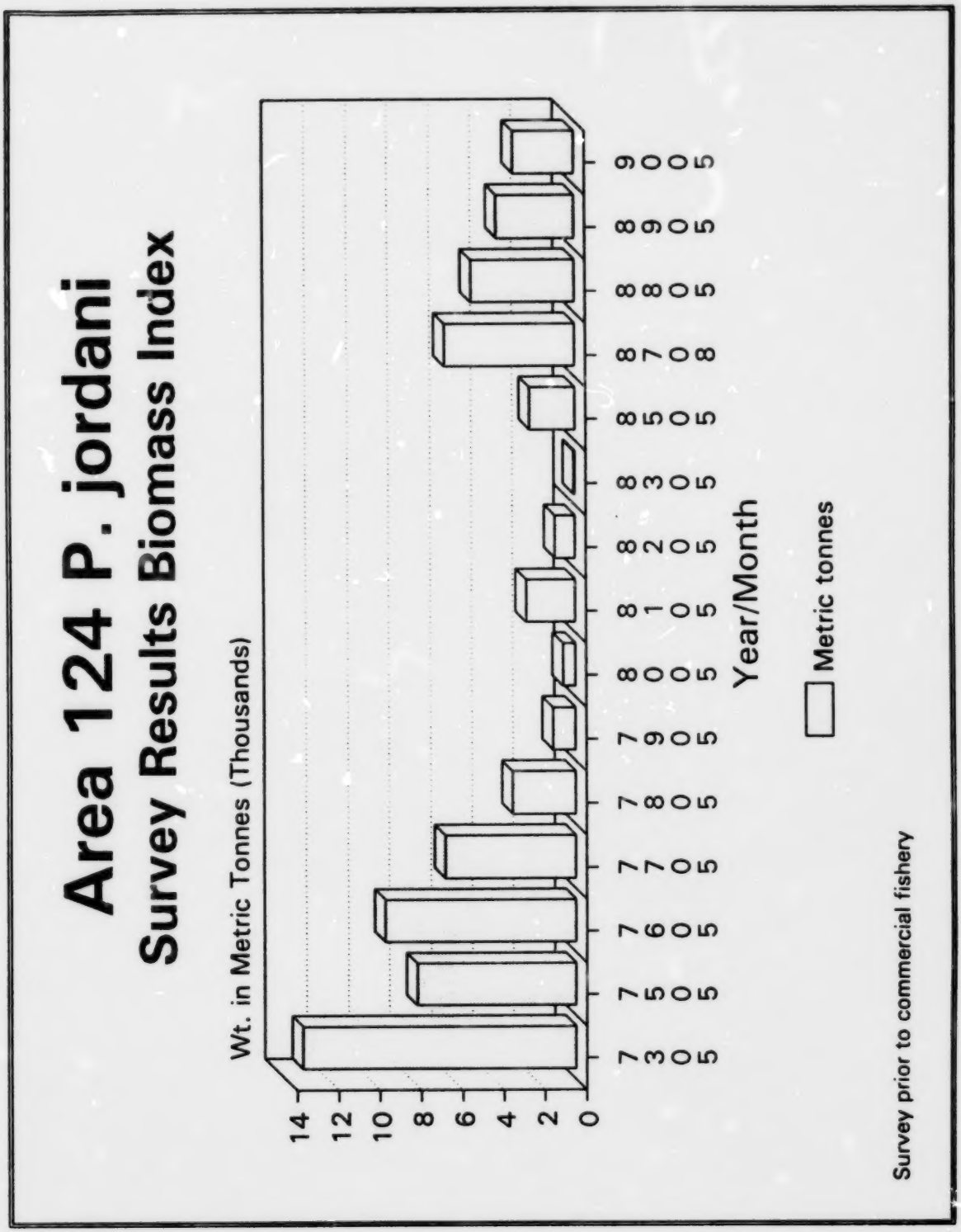

Fig. 3. Annual estimates of total pink shrimp biomass on Tofino Ground, 1977-90.

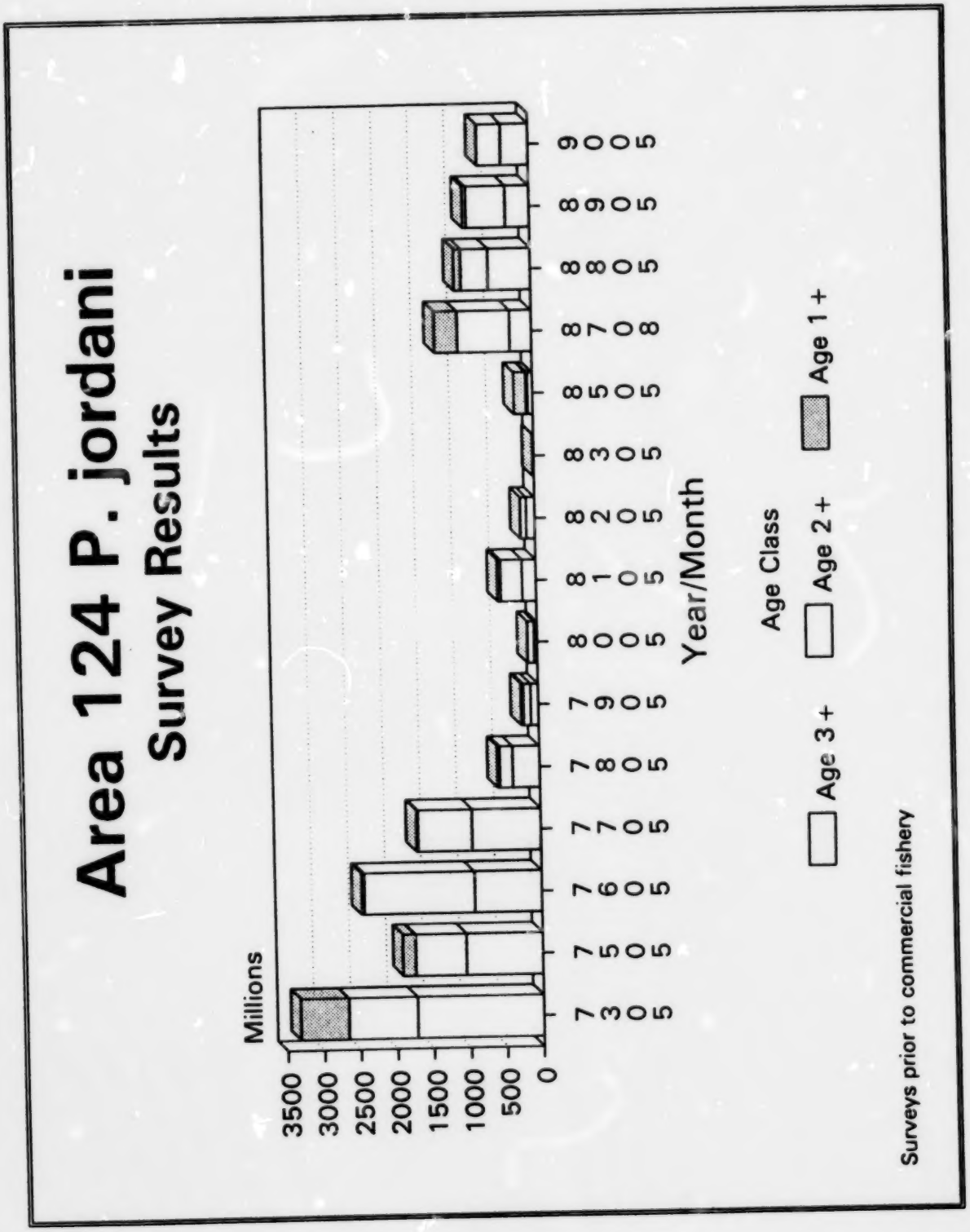

Fig. 4. Age composition of Pink shrimp on Tofino Ground, 1973-90.

APPENDIX TABLE 1

APPENDIX TABLE 1. FISHING LOG AND CATCH TOTALS COMPLETED DURING W.E. RICKER SHRIMP BIOMASS SURVEY 90-S-1, TO WEST COAST VANCOUVER ISLAND, APRIL 24-MAY 2, 1990 (SEE FOOTNOTE FOR EXPLANATION OF TERMS).

HAUL NO.	1	2	3	4	5	6
DATE	APRIL 24	APRIL 24	APRIL 24	APRIL 24	APRIL 24	APRIL 24
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1037	1145	1249	1401	1502	1621
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	42.6	44.4	43.7	46.2	46.5	45.0
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	08.1	06.2	02.6	04.9	08.5	10.7
DIRECTION (DEG.TRUE)	326	152	339	328	154	322
FINISH N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	44.0	43.3	45.1	47.4	45.3	46.1
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	09.8	05.3	03.5	06.0	07.7	12.0
DISTANCE NAUT. MI.	1.4	1.3	1.5	1.5	1.4	1.4
DEPTH (METERS)	133-137	116-115	101-100	102-104	122-121	139-144
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	186	257	119	163	225	67
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	1	2	3	4	5	6
DATE	APRIL 24	APRIL 24	APRIL 24	APRIL 24	APRIL 24	APRIL 24
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	186	257	119	163	225	67
SHRIMP						
PINK (JORDANI)	4	..	..	..	4	28
NUM/KG	249	..	..	..	208	215
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	2	T
OTHERS	..	T	..	T	T	T
FLATFISH						
DAB (PACIFIC)	..	29	11	9	20	..
FLATHEAD SOLE	..	..	..	..	T	..
HALIBUT	..	..	3	..	7	..
REX SOLE	1	2	T	1	8	..
SLENDER SOLE	T	2	T	T	2	T
TURBOT	1	1	T	..	T	2
OTHERS	T	17	4	1	8	..
ROCKFISH						
S. CRAMERI	T	..	..	..	..	..
S. FLAVIDUS	6	T	..	..	..	5
S. PINNIGER	2	..	..	..	..	..
OTHERS	T	..	..	..	..	..
OTHER ROUNDFISH						
EULACHON	21	13	3	7	14	24
HERRING	3	5	18	4	2	T
LINGCOD	8	..	..	..	23	..
PACIFIC COD	1	90	..	T	10	1
WALLEYE POLLOCK	T	T	1	1	1	..
OTHERS	..	T	9	4	1	1
SELACHI						
DOGFISH	139	98	64	132	118	5
SKATES	..	..	6	4	1	1
OTHERS	..	..	..	..	4	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	7	8	9	10	11	12
DATE	APRIL 24	APRIL 25	APRIL 25	APRIL 25	APRIL 25	APRIL 25
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1721	0711	0826	0938	1107	1200
DURATION(HR.MIN)	.30	.30	.30	.31	.30	.30
START N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	45.6	46.4	46.8	47.5	48.0	50.8
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	13.4	15.2	12.6	10.3	07.2	09.2
DIRECTION (DEG.TRUE)	146	330	330	342	337	325
FINISH N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	44.4	47.5	48.0	48.8	49.3	52.0
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	12.3	16.3	13.6	10.9	08.0	10.4
DISTANCE NAUT. MI.	1.4	1.5	1.6	1.4	1.4	1.5
DEPTH (METERS)	153-150	158-161	144-146	129-128	108-109	110-110
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	9.8	..	..	..
BOTTOM TEMP (DEG.C)	..	..	7.5	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	141	232	179	234	61	105
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	7	8	9	10	11	12
DATE	APRIL 24	APRIL 25	APRIL 25	APRIL 25	APRIL 25	APRIL 25
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	141	232	179	234	61	106
SHRIMP						
PINK (JORDANI)	29	17	27	72	..	..
NUM/KG	234	214	160	221	..	..
OTHER SHRIMP	T	..	T	..	..	..
INVERTBRATES						
SEA URCHINS	1	3	1	..	..	..
OTHERS	..	..	1	..	..	..
FLATFISH						
DAB (PACIFIC)	..	..	..	4	9	28
FLATHEAD SOLE	..	..	..	..	..	..
HALIBUT	..	8	..	6	..	5
REX SOLE	2	5	2	1	T	..
SLENDER SOLE	T	1	T	..	..	..
TURBOT	25	44	10	2	..	..
OTHERS	T	7	1	2	1	1
ROCKFISH						
S. CRAMERI	..	..	T	..	..	..
S. FLAVIDUS	..	..	..	27	7	T
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	14	1	T	..	..
OTHER ROUNDFISH						
EULACHON	55	13	12	34	19	10
HERRING	..	..	1	T	4	6
LINGCOD	..	8	5	5	2	..
PACIFIC COD	3	17	5	1	T	6
WALLEYE POLLOCK	..	..	T	3	..	1
OTHERS	1	2	2	4	T	1
SELACHI						
DOGFISH	16	90	94	60	19	48
SKATES	9	3	17	12	..	..
OTHERS	T	T	T	1	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	13	14	15	16	17	18
DATE	APRIL 25	APRIL 25	APRIL 26	APRIL 26	APRIL 26	APRIL 26
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1321	1445	0715	0831	0931	1138
DURATION(HR.MIN)	.30	.30	.31	.30	.29	.30
START N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	50.3	49.9	49.6	48.4	48.9	52.4
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	12.4	14.5	17.4	17.8	20.3	14.0
DIRECTION (DEG.TRUE)	322	296	328	328	148	332
FINISH N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	51.3	50.4	50.9	49.9	47.8	53.7
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	13.8	16.2	18.7	19.1	19.0	15.1
DISTANCE NAUT. MI.	1.4	1.2	1.5	1.6	1.3	1.4
DEPTH (METERS)	129-130	142-148	152-154	158-162	175-174	127-125
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	239	188	192	212	158	212
REMARKS	USABLE	USABLE	USABLE	USABLE	NET TORN	USABLE
					USABLE	

APPENDIX TABLE 1 CONTINUED

HAUL NO.	13	14	15	16	17	18
DATE	APRIL 25	APRIL 25	APRIL 26	APRIL 26	APRIL 26	APRIL 26
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	239	188	192	212	158	212
SHRIMP						
PINK (JORDANI)	42	45	102	25	..	73
NUM/KG	198	178	218	233	..	200
OTHER SHRIMP	..	..	..	..	T	T
INVERTBRATES						
SEA URCHINS	..	..	..	1	2	..
OTHERS	..	..	..	..	..	T
FLATFISH						
DAB (PACIFIC)	..	..	..	..	..	1
FLATHEAD SOLE	..	..	..	4	4	..
HALIBUT	..	..	..	..	..	..
REX SOLE	T	..	..	..	7	1
SLENDER SOLE	T	..	..	4	4	3
TURBOT	..	2	5	42	87	6
OTHERS	..	..	..	4	21	..
ROCKFISH						
S. CRAMERI	..	..	5	..	5	..
S. FLAVIDUS	2	..	1	2	..	46
S. PINNIGER	..	3	..	..	..	..
OTHERS	..	T	T	3	6	..
OTHER ROUNDFISH						
EULACHON	22	22	37	35	2	23
HERRING	14	2	10	1	1	..
LINGCOD	21	..	..	..	11	..
PACIFIC COD	1	4	1	6	1	1
WALLEYE POLLOCK	3	..	..	..	..	2
OTHERS	4	4	T	7	1	T
SELACHI						
DOGFISH	128	102	29	45	1	56
SKATES	..	4	2	33	5	..
OTHERS	2	..	T	T	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	19	20	21	22	23	24
DATE	APRIL 26	APRIL 26	APRIL 26	APRIL 26	APRIL 26	APRIL 26
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1235	1342	1440	1538	1631	1731
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	54.3	52.0	53.1	51.2	54.3	56.0
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	13.0	15.9	19.1	19.8	21.4	19.7
DIRECTION (DEG.TRUE)	152	316	146	335	310	159
FINISH N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	53.2	53.1	52.0	52.5	55.5	54.9
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	12.2	17.2	18.0	20.9	22.4	19.0
DISTANCE NAUT. MI.	1.2	1.3	1.3	1.5	1.4	1.3
DEPTH (METERS)	116-115	137-138	147-146	161-158	150-148	137-137
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	171	215	327	380	264	181
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	19	20	21	22	23	24
DATE	APRIL 26	APRIL 26	APRIL 26	APRIL 26	APRIL 26	APRIL 26
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	171	215	327	380	264	181
SHRIMP						
PINK (JORDANI)	9	107	145	220	161	58
NUM/KG	206	219	228	265	242	211
OTHER SHRIMP	..	T	..	..	..	T
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	..	2	T	..	..
FLATFISH						
DAB (PACIFIC)	24	1	..	..	..	..
FLATHEAD SOLE	..	..	..	5	2	..
HALIBUT	8	7	..	..	..	3
REX SOLE	9	..	..	..	T	..
SLENDER SOLE	7	2	5	5	5	1
TURBOT	3	3	7	33	26	6
OTHERS	..	..	..	5	..	..
ROCKFISH						
S. CRAMERI	..	..	3	..	5	2
S. FLAVIDUS	4	..	2	5	..	3
S. PINNIGER	3	4	6	..	..	..
OTHERS	T	2	..	..	..	..
OTHER ROUNDFISH						
EULACHON	6	21	28	65	38	21
HERRING	..	..	8	..	2	1
LINGCOD	..	7	8	..	8	2
PACIFIC COD	2	3	3	..	..	..
WALLEYE POLLOCK	1	..	..	..	..	..
OTHERS	2	1	7	3	2	1
SELACHI						
DOGFISH	87	51	101	19	14	75
SKATES	6	5	..	20	..	8
OTHERS	..	1	2	..	1	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	25	26	27	28	29	30
DATE	APRIL 27	APRIL 27	APRIL 27	APRIL 27	APRIL 27	APRIL 27
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	0711	0805	1111	1209	1326	1450
DURATION(HR.MIN)	.30	.29	.30	.30	.30	.30
START N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	55.1	57.8	55.8	58.2	58.6	57.2
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	16.3	18.1	12.6	14.4	11.8	19.6
DIRECTION (DEG.TRUE)	323	328	304	313	297	304
FINISH N. LAT. (DEG)	048	048	048	048	048	048
(MIN)	56.3	59.1	56.6	59.0	59.3	58.1
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	17.6	19.2	14.5	16.2	13.5	21.4
DISTANCE NAUT. MI.	1.5	1.5	1.6	1.3	1.4	1.4
DEPTH (METERS)	122-125	123-124	109-115	111-115	94-100	135-139
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	354	316	242	335	532	153
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	25	26	27	28	29	30
DATE	APRIL 27	APRIL 27	APRIL 27	APRIL 27	APRIL 27	APRIL 27
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	354	316	242	335	532	153
SHRIMP						
PINK (JORDANI)	220	93	47	192	..	91
NUM/KG	220	203	192	195	..	218
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	..	..	..	..	T
FLATFISH						
DAB (PACIFIC)	..	..	19	T	50	..
FLATHEAD SOLE	..	..	1	5	..	..
HALIBUT	..	..	..	..	..	..
REX SOLE	..	..	4	3	5	..
SLENDER SOLE	1	2	8	10	..	8
TURBOT	1	1	..	2	T	..
OTHERS	1	..	1	..	16	..
ROCKFISH						
S. CRAMERI	1	..	..	..	..	2
S. FLAVIDUS	..	..	3	..	294	3
S. PINNIGER	..	..	..	..	..	..
OTHERS	1	..	T	1	..	..
OTHER ROUNDFISH						
EULACHON	52	17	7	30	2	14
HERRING	15	3	1	T	1	1
LINGCOD	..	T	5	6	..	3
PACIFIC COD	..	..	T	1	36	..
WALLEYE POLLOCK	..	..	2	T	2	..
OTHERS	1	1	9	3	11	5
SELACHI						
DOGFISH	60	198	135	68	114	21
SKATES	..	1	..	14	1	4
OTHERS	1	..	..	..	..	1

APPENDIX TABLE 1 CONTINUED

HAUL NO.	31	32	33	34	35	36
DATE	APRIL 28	APRIL 28	APRIL 28	APRIL 28	APRIL 28	APRIL 28
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	0739	0858	1058	1215	1328	1438
DURATION(HR.MIN)	.30	.33	.30	.30	.30	.30
START N. LAT. (DEG)	048	048	048	049	049	049
(MIN)	57.4	59.2	59.7	00.3	00.6	03.0
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	22.5	24.0	21.5	18.9	16.0	18.1
DIRECTION (DEG.TRUE)	280	308	297	303	300	305
FINISH N. LAT. (DEG)	048	049	049	049	049	049
(MIN)	57.7	00.2	00.6	01.1	01.4	03.9
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	24.2	25.9	23.4	20.7	18.1	19.9
DISTANCE NAUT. MI.	1.4	1.5	1.5	1.5	1.5	1.4
DEPTH (METERS)	143-146	140-143	130-135	119-124	107-111	103-107
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	236	304	345	320	408	271
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	31	32	33	34	35	36
DATE	APRIL 28	APRIL 28	APRIL 28	APRIL 28	APRIL 28	APRIL 28
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	236	303	345	321	408	271
SHRIMP						
PINK (JORDANI)	169	213	199	173	..	..
NUM/KG	308	290	247	229	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	..	..	1	..	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	12	50
FLATHEAD SOLE	..	..	3	2	..	..
HALIBUT	..	..	5	6	..	5
REX SOLE	..	..	T	..	3	1
SLENDER SOLE	3	1	3	3	2	T
TURBOT	9	7	4	2	1	..
OTHERS	1	..	1	..	9	1
ROCKFISH						
S. CRAMERI	3	..	1	..	..	..
S. FLAVIDUS	..	..	..	..	..	2
S. PINNIGER	..	..	3	..	..	..
OTHERS	..	T	..	..	..	..
OTHER ROUNDFISH						
EULACHON	28	48	99	60	5	6
HERRING	..	2	2	..	1	1
LINGCOD	11	16	5	7	3	3
PACIFIC COD	1	2	..	..	4	11
WALLEYE POLLOCK	..	..	..	..	3	1
OTHERS	..	..	1	5	2	7
SELACHI						
DOGFISH	10	14	17	53	354	183
SKATES	..	..	1	7	9	..
OTHERS	1	..	1	2	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	37	38	39	40	41	42
DATE	APRIL 28	APRIL 28	APRIL 28	APRIL 29	APRIL 29	APRIL 29
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1612	1722	1842	0715	0818	0917
DURATION(HR.MIN)	.30	.30	.30	.32	.31	.29
START N. LAT. (DEG)	049	049	049	048	049	049
(MIN)	02.8	02.3	01.8	58.7	01.6	04.1
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	20.8	23.4	25.8	26.4	28.7	30.3
DIRECTION (DEG.TRUE)	307	308	311	317	307	307
FINISH N. LAT. (DEG)	049	049	049	048	049	049
(MIN)	03.7	03.2	02.7	59.6	02.4	05.0
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	22.7	25.1	27.5	28.3	30.6	32.0
DISTANCE NAUT. MI.	1.7	1.5	1.5	1.7	1.5	1.6
DEPTH (METERS)	119-122	129-129	137-134	150-152	144-142	134-131
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	276	322	270	50	105	107
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	37	38	39	40	41	42
DATE	APRIL 28	APRIL 28	APRIL 28	APRIL 29	APRIL 29	APRIL 29
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	276	323	270	50	105	107
SHRIMP						
PINK (JORDANI)	167	205	166	T	34	74
NUM/KG	197	192	270	..	288	267
OTHER SHRIMP	..	..	..	T	T	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	..	..	2	..	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	..	..
FLATHEAD SOLE	3	1	T	..	..	..
HALIBUT	..	..	..	..	..	..
REX SOLE	..	..	T	1	T	..
SLENDER SOLE	4	1	4	1	3	1
TURBOT	5	3	1	6	9	..
OTHERS	..	..	T	3	1	..
ROCKFISH						
S. CRAMERI	..	2	..	..	..	..
S. FLAVIDUS	..	..	2	..	..	..
S. PINNIGER	..	..	..	..	..	3
OTHERS	..	..	..	1	..	..
OTHER ROUNDFISH						
EULACHON	55	97	81	22	40	24
HERRING	2	..	1	..	1	..
LINGCOD	..	7	7	6	..	..
PACIFIC COD	..	..	..	3	4	..
WALLEYE POLLOCK	..	..	..	..	..	..
OTHERS	1	1	..	4	T	..
SELACHI						
DOGFISH	32	5	8	1	13	5
SKATES	6	1	..	..	..	..
OTHERS	1	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	43	44	45	46	47	48
DATE	APRIL 29	APRIL 29	APRIL 29	APRIL 29	APRIL 29	APRIL 29
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1010	1131	1226	1326	1421	1522
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	05.6	05.0	06.3	05.8	08.0	08.5
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	29.6	25.2	24.5	20.2	24.6	29.0
DIRECTION (DEG.TRUE)	132	308	125	301	308	128
FINISH N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	04.7	06.0	05.5	06.7	08.8	07.7
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	28.0	27.0	22.8	22.0	26.2	27.4
DISTANCE NAUT. MI.	1.5	1.5	1.4	1.5	1.3	1.3
DEPTH (METERS)	124-128	122-122	111-108	94- 98	102-104	114-115
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	69	221	114	127	183	248
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	43	44	45	46	47	48
DATE	APRIL 29	APRIL 29	APRIL 29	APRIL 29	APRIL 29	APRIL 29
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	69	221	114	127	183	248
SHRIMP						
PINK (JORDANI)	55	84	10	..	74	119
NUM/KG	231	162	185	..	207	192
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	T	..	..	..	..
FLATFISH						
DAB (PACIFIC)	..	2	17	41	28	26
FLATHEAD SOLE	..	9	..	T	..	2
HALIBUT	..	6	..	..	..	4
REX SOLE	..	..	..	2	1	T
SLENDER SOLE	..	6	5	T	3	2
TURBOT	..	4	..	2	..	..
OTHERS	..	T	1	4	4	..
ROCKFISH						
S. CRAMERI	..	..	..	..	..	..
S. FLAVIDUS	..	4	16	7	4	2
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	T	..	..	..	..
OTHER ROUNDFISH						
EULACHON	14	64	19	10	36	71
HERRING	..	1	1	T	1	..
LINGCOD	..	5	6	11	8	5
PACIFIC COD	..	1	2	6	11	..
WALLEYE POLLOCK	..	1	..	1	T	1
OTHERS	..	5	2	13	3	2
SELACHI						
DOGFISH	..	29	35	27	9	14
SKATES	..	..	..	3	1	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	49	50	51	52	53	54
DATE	APRIL 29	APRIL 29	APRIL 30	APRIL 30	APRIL 30	APRIL 30
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1616	1716	0712	0804	0912	0958
DURATION(HR.MIN)	.30	.30	.29	.31	.22	.30
START N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	07.0	07.8	08.2	10.3	11.1	09.7
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	29.3	34.1	21.8	26.0	30.7	31.2
DIRECTION (DEG.TRUE)	314	131	310	308	144	313
FINISH N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	08.0	07.0	09.1	11.3	10.2	10.7
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	31.1	32.6	23.4	27.8	28.9	33.0
DISTANCE NAUT. MI.	1.6	1.2	1.5	1.5	1.6	1.6
DEPTH (METERS)	124-123	125-126	91- 92	94- 97	106-104	113-113
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	359	70	94	168	212	146
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	49	50	51	52	53	54
DATE	APRIL 29	APRIL 29	APRIL 30	APRIL 30	APRIL 30	APRIL 30
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	359	70	94	168	212	146
SHRIMP						
PINK (JORDANI)	280	25	T	58	55	102
NUM/KG	220	240	..	195	204	225
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	T	..	..	T	T	..
FLATFISH						
DAB (PACIFIC)	2	..	12	9	35	10
FLATHEAD SOLE	2	..	..	T	T	4
HALIBUT	..	..	..	..	..	..
REX SOLE	..	T	..	..	5	..
SLENDER SOLE	1	4	T	T	2	2
TURBOT	..	1	T	..	1	..
OTHERS	..	1	3	1	4	2
ROCKFISH						
S. CRAMERI	..	..	..	..	..	..
S. FLAVIDUS	4	..	28	..	..	..
S. PINNIGER	..	..	..	..	1	..
OTHERS	..	..	..	..	T	..
OTHER ROUNDFISH						
EULACHON	48	19	15	15	20	14
HERRING	1	1	..	..	..	T
LINGCOD	5	..	5	24	8	6
PACIFIC COD	..	1	..	5	40	..
WALLEYE POLLOCK	T	T	..	..	T	..
OTHERS	1	..	10	15	1	3
SELACHI						
DOGFISH	9	18	15	41	40	3
SKATES	5	..	6	..	..	..
OTHERS	1	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	55	56	57	58	59	60
DATE	APRIL 30	APRIL 30	APRIL 30	APRIL 30	APRIL 30	APRIL 30
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1119	1225	1318	1416	1510	1634
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	10.2	12.2	13.3	12.6	15.2	16.2
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	35.3	35.7	34.5	30.1	31.8	36.8
DIRECTION (DEG.TRUE)	129	307	131	307	315	150
FINISH N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	09.3	13.0	12.5	13.5	16.2	15.3
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	33.7	37.4	33.0	31.8	33.5	35.2
DISTANCE NAUT. MI.	1.4	1.4	1.4	1.5	1.5	1.4
DEPTH (METERS)	120-120	115-115	109-108	100-101	92- 94	105-104
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	44	154	153	68	108	93
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	55	56	57	58	59	60
DATE	APRIL 30	APRIL 30	APRIL 30	APRIL 30	APRIL 30	APRIL 30
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	44	154	153	68	108	93
SHRIMP						
PINK (JORDANI)	6	93	62	T	..	..
NUM/KG	230	240	207	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	T	..	..	..	..
FLATFISH						
DAB (PACIFIC)	..	10	23	10	27	11
FLATHEAD SOLE	1	..	2	1	..	1
HALIBUT	..	..	..	..	..	..
REX SOLE	1	2	2	3	3	1
SLENDER SOLE	3	1	1	1	T	T
TURBOT	..	..	T	..	T	1
OTHERS	..	..	1	6	9	2
ROCKFISH						
S. CRAMERI	..	T	..	..	..	..
S. FLAVIDUS	..	..	..	..	..	7
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..
OTHER ROUNDFISH						
EULACHON	4	26	32	10	15	18
HERRING	..	T	T	..	..	6
LINGCOD	..	..	..	5	6	3
PACIFIC COD	1	1	16	1	4	23
WALLEYE POLLOCK	..	T	1	T	1	1
OTHERS	T	T	1	15	19	4
SELACHI						
DOGFISH	20	21	9	16	24	15
SKATES	8	..	3	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	61	62	63	64	65	66
DATE	APRIL 30	MAY 1	MAY 1	MAY 1	MAY 1	MAY 1
AREA	CLSD	NOSD	NOSD	NOSD	NOSD	NOSD
TIME START (PST)	1729	0719	0813	0910	1011	1139
DURATION(HR.MIN)	.30	.27	.30	.30	.30	.30
START N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	14.6	26.4	27.5	26.7	25.3	24.0
W. LONG. (DEG)	126	127	127	126	126	126
(MIN)	36.9	03.0	01.4	57.1	54.7	56.0
DIRECTION (DEG.TRUE)	310	320	318	320	313	322
FINISH N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	15.6	27.4	26.4	27.7	24.3	25.0
W.LONG. (DEG)	126	127	126	126	126	126
(MIN)	38.8	04.2	59.7	57.5	53.1	57.2
DISTANCE NAUT. MI.	1.6	1.4	1.4	1.5	1.5	1.3
DEPTH (METERS)	111-112	139-140	130-127	118-117	118-119	131-129
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	149	48	308	92	158	215
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	61	62	63	64	65	66
DATE	APRIL 30	MAY 1	MAY 1	MAY 1	MAY 1	MAY 1
AREA	CLSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	149	48	308	92	158	215
SHRIMP						
PINK (JORDANI)	22	6	162	19	41	140
NUM/KG	214	352	328	238	204	265
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	T	..	..	T	T
FLATFISH						
DAB (PACIFIC)	39	..	..	..	..	..
FLATHEAD SOLE	..	..	6	1	4	3
HALIBUT	..	..	4	4	..	..
REX SOLE	..	6	4	1	5	..
SLENDER SOLE	2	3	3	1	5	2
TURBOT	2	..	3	2	3	6
OTHERS	3	..	..	1	1	T
ROCKFISH						
S. CRAMERI	..	..	..	..	..	..
S. FLAVIDUS	6	..	..	..	36	5
S. PINNIGER	..	..	6	..	..	..
OTHERS	..	3	..	T	..	2
OTHER ROUNDFISH						
EULACHON	22	7	15	19	47	41
HERRING	5	5	..	..	..	1
LINGCOD	..	..	..	4	..	..
PACIFIC COD	31	1	5	7	4	4
WALLEYE POLLOCK	..	..	44	32	5	..
OTHERS	6	..	..	1	1	..
SELACHI						
DOGFISH	3	15	45	..	5	11
SKATES	8	2	11	..	1	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	67	68	69	70	71	72
DATE	MAY 1	MAY 1	MAY 1	MAY 1	MAY 1	MAY 2
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	CLSD
TIME START (PST)	1240	1333	1433	1611	1712	0542
DURATION(HR.MIN)	.30	.30	.30	.30	.25	.30
START N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	24.7	22.2	21.4	19.3	17.8	15.0
W. LONG. (DEG)	127	126	126	126	126	126
(MIN)	00.3	56.3	51.8	55.0	55.8	40.9
DIRECTION (DEG.TRUE)	137	136	312	133	131	137
FINISH N. LAT. (DEG)	049	049	049	049	049	049
(MIN)	23.7	21.2	22.4	18.4	17.1	14.1
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	58.8	54.7	53.3	53.4	54.5	39.2
DISTANCE NAUT. MI.	1.5	1.5	1.4	1.5	1.2	1.5
DEPTH (METERS)	136-137	141-141	128-131	149-143	147-147	116-116
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	251	166	114	135	317	116
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	67	68	69	70	71	72
DATE	MAY 1	MAY 1	MAY 1	MAY 1	MAY 1	MAY 2
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	CLSD
CATCH TOTAL (KG)	251	166	114	135	317	116
SHRIMP						
PINK (JORDANI)	34	45	7	12	34	19
NUM/KG	358	280	188	206	273	234
OTHER SHRIMP	..	T	T	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	1	..	..
OTHERS	..	T	T	1	T	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	..	11
FLATHEAD SOLE	..	6	..	8	3	11
HALIBUT	4	..	14	..	..	..
REX SOLE	8	2	1	8	2	5
SLENDER SOLE	7	1	2	4	3	9
TURBOT	14	10	1	2	2	..
OTHERS	..	2	..	..	1	4
ROCKFISH						
S. CRAMERI	..	5	..	..	..	..
S. FLAVIDUS	89	10	26	21	7	5
S. PINNIGER	4	..	2	..	161	1
OTHERS	7	..	19	..	37	..
OTHER ROUNDFISH						
EULACHON	4	49	32	61	16	16
HERRING	21	1	1	..	1	1
LINGCOD	8	..	..	..	..	..
PACIFIC COD	3	3	1	1	2	8
WALLEYE POLLOCK	..	..	1	..	..	T
OTHERS	T	..	..	T	..	T
SELACHI						
DOGFISH	41	22	6	14	45	5
SKATES	7	10	1	1	T	21
OTHERS	T	..	..	1	3	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	73	74	75	76	77	78
DATE	MAY 2	MAY 2	MAY 2	MAY 2	MAY 2	MAY 2
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	0705	0759	0850	0944	1109	1203
DURATION(HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	049	049	049	049	048	048
(MIN)	09.0	06.6	04.4	02.2	59.1	57.2
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	33.4	31.9	27.5	22.8	23.6	19.4
DIRECTION (DEG.TRUE)	145	145	131	126	124	130
FINISH N. LAT. (DEG)	049	049	049	049	048	048
(MIN)	08.1	05.7	03.5	01.4	58.3	56.2
W.LONG. (DEG)	126	126	126	126	126	126
(MIN)	31.6	30.1	25.7	21.1	21.6	17.7
DISTANCE NAUT. MI.	1.5	1.4	1.5	1.4	1.4	1.4
DEPTH (METERS)	121-122	127-127	129-129	129-124	141-138	130-127
SEE FIGURE NO.						
SURFACE TEMP (DEG.C)	..	..	..	..	..	..
BOTTOM TEMP (DEG.C)	..	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	337	171	534	327	315	280
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	73	74	75	76	77	78
DATE	MAY 2	MAY 2	MAY 2	MAY 2	MAY 2	MAY 2
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	337	171	534	327	315	280
SHRIMP						
PINK (JORDANI)	268	125	387	214	240	110
NUM/KG	235	257	312	276	267	216
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
SEA URCHINS	..	..	..	..	..	..
OTHERS	..	..	T	T	..	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	..	..
FLATHEAD SOLE	5	..	1	1	T	2
HALIBUT	..	..	..	..	..	3
REX SOLE	6	2	..	1	..	..
SLENDER SOLE	7	2	2	1	1	3
TURBOT	..	2	3	3	6	15
OTHERS	..	..	2	..	..	..
ROCKFISH						
S. CRAMERI	T	..	..	5	..	6
S. FLAVIDUS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	..	1	1	..	1
OTHER ROUNDFISH						
EULACHON	18	11	57	86	49	61
HERRING	..	..	2	..	..	28
LINGCOD	..	..	18	..	7	21
PACIFIC COD	1	1	1	..	..	..
WALLEYE POLLOCK	T	T	..	..	..	..
OTHERS	T	..	..	T	1	..
SELACHI						
DOGFISH	32	28	60	15	11	30
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 1 CONTINUED

HAUL NO.	79	80	81	82
DATE	MAY 2	MAY 2	MAY 2	MAY 2
AREA	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1256	1351	1452	1618
DURATION(HR.MIN)	.30	.30	.30	.30
START N. LAT. (DEG)	048	048	048	048
(MIN)	54.8	53.4	51.8	52.2
W. LONG. (DEG)	126	126	126	126
(MIN)	17.4	18.1	17.9	15.5
DIRECTION (DEG.TRUE)	133	302	121	112
FINISH N. LAT. (DEG)	048	048	048	048
(MIN)	54.1	54.2	51.0	51.5
W.LONG. (DEG)	126	126	126	126
(MIN)	15.8	20.0	16.1	13.6
DISTANCE NAUT. MI.	1.1	1.4	1.6	1.4
DEPTH (METERS)	131-125	137-143	145-142	132-127
SEE FIGURE NO.				
SURFACE TEMP (DEG.C)	10.8	..	..	..
BOTTOM TEMP (DEG.C)	7.5	..	..	..
TYPE OF GEAR	8	8	8	8
TOTAL CATCH (KG)	233	187	144	236
REMARKS	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1 CONTINUED

HAUL NO.	79	80	81	82
DATE	MAY 2	MAY 2	MAY 2	MAY 2
AREA	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	233	187	144	236
SHRIMP				
PINK (JORDANI)	148	82	56	86
NUM/KG	258	239	185	206
OTHER SHRIMP	..	..	..	..
INVERTBRATES				
SEA URCHINS	..	..	..	..
OTHERS	..	T	..	..
FLATFISH				
DAB (PACIFIC)	..	..	..	..
FLATHEAD SOLE	..	4	5	1
HALIBUT	..	..	..	5
REX SOLE	..	T	..	10
SLENDER SOLE	1	..	1	T
TURBOT	4	5	17	5
OTHERS	1	..	4	..
ROCKFISH				
S. CRAMERI	..	..	5	..
S. FLAVIDUS	..	..	1	..
S. PINNIGER	..	..	..	..
OTHERS	2	1	..	T
OTHER ROUNDFISH				
EULACHON	71	57	42	81
HERRING	..	15	T	..
LINGCOD	..	5	..	4
PACIFIC COD	..	..	1	1
WALLEYE POLLOCK	..	..	..	..
OTHERS	..	3	4	3
SELACHI				
DOGFISH	6	15	8	39
SKATES	..	..	..	..
OTHERS	..	..	..	1

Footnotes to Appendix Table 1.

Area: CLSD = Clayoquot Sound (Tofino ground); NOSD = Nootka Sound (Nootka ground)
Time Start: PST = Pacific Standard Time
Type of gear: 8 = Nat. Mar. Fish. 61-ft, high-lift, shrimp trawl
Catch: T = Trace (<1 kilogram)

Others (any category):	Species listed below which amounted to <0.5% of the total catch for the cruise.
Shrimp:	Prawn, Sidestripe shrimp
Invertebrates:	Basket stars; brittle star; Box crab; cucumbers; jellyfish; Munida; scallop; squid; starfish; urchins.
Flatfish:	Dover sole; English sole; Flathead sole; Halibut; Petrale sole; Rex sole.
Rockfish:	*Sebastes aleutianus; S. alutus; S. babcocki; S. crameri; S. elongatus; S. paucispinis; S. proriger; S. zacentrus*
Roundfish:	Eelpout; Hake; Pacific tomcod; Pink salmon; poacher; Pollock; Sablefish; sculpin; Shad; Shiner perch
Selachii:	Ratfish